Course Title: CHEMISTRY A

Course No. 4359 **Grade level**: 9-12

Text and Resources:
N/A

Course Content: Key Content Standards and Course Objectives

The following objectives are based on the Grades 9-12 Chemistry standards:

1. **Atomic and Molecular Structure**: The Periodic Table displays the elements in increasing atomic number and shows how periodicity of the physical and chemical properties of the elements relates to atomic structure (1-a-d), the nucleus (1-e).
2. **Chemical Bonds:** Biological, chemical, and physical properties of matter result form the ability of atoms to form bonds based on electrostatic forces between electrons and protons, and between atoms and molecules (2-a, b, d), electrostatic attraction and repeating patterns of positive and negative ions (2-c), Lewis dot structures (2-e).
3. **Conservation of Matter and Stoichiometry**: The conservation of atoms in chemical reactions leads to the principle of conservation of matter and the ability to calculate the mass of products and reactants. How to describe chemical reactions by writing balanced equations (3-a,b,c), how to determine the molar mass of a molecule from its chemical formula (3-d), calculating the masses of reactants and products in a chemical reaction (3-e).
4. **Gases and Their Properties:** The Kinetic Molecular theory describes the motion of atoms and molecules and explains the properties of gases (4-a, b), the gas laws and the relations between pressure, temperature, and volume of ideal gasses (4-c), the values and meanings of standard temperature and pressure (4-d), how to convert between Celsius and Kelvin temperature scales (4-e,f).
5. **Acids and Bases:** Acids, bases, and salts are three classes of compounds that form ions in water solutions. The properties of acids, bases and salt solutions (5-a,b,c), the PH scale to characterize acid and base solutions (5-d).

Investigation and Experimentation

Students will ask meaningful questions and conduct careful investigations addressing the content of the above Chemistry standards.

Course Description

Course Value: *One Semester

Credit Value: 1 – 5 credits
Prerequisite: Algebra I

This course is designed for the advanced high school student. The instructor will direct the resources and guide the assignments.

Chemistry A will explore both the macroscopic properties of matter and the microscopic properties of matter's constituent particles. Starting the study of high school chemistry with atomic and molecular structure is important because this is a foundation of the discipline. The in-depth study of the Periodic Table will help students understand the nature of matter and its transformation. Students will learn new vocabulary, including the rules for naming simple compounds and ions.

The Investigation and Experimentation standards will be infused throughout this course and will be used to reinforce content and sound thinking.

*Open entry/open exit

Methods of Study

1. Students will complete all activities assigned.
2. Students will participate in discussion with other class members and/or teacher.

Evaluation of Performance Standards

1. Students will complete all assignments with a minimum of 70% accuracy.
2. The supervising teacher will be satisfied with the quality of the student's work.
3. The student must receive a minimum score of 70% on a teacher assigned final evaluation.
4. Letter grade contracts are optional and require a higher level of performance.